



A Conversation on the Future of European Soil **11th March 2021, 10.30 to 12.00**

Webinar summary report

On 11th March 2021, the RISE Foundation held a webinar on soil as part of the [Forum for the Future of Agriculture](#)'s Solutions week. The webinar was the start of a new RISE project on soil, due to be released in 2022. It will take an active, practical approach to discussing how we can take what we know on soil management and incentivising a change in agricultural practices, to provoke a new era in soil health.

The webinar brought together four experts at the forefront of changing how we manage our soils in Europe today. The discussion was moderated by RISE's Report Director, Allan Buckwell and opened and closed by the RISE Chairman, Janez Potocnik.

The opening address by RISE Chairman, Janez Potocnik

Janez opened the webinar by reminding the audience that the COVID-19 pandemic has caused us to re-evaluate our food system – its resilience to shocks, its role in the global diet given what the pandemic revealed about health status and morbidity, and the impact of global biodiversity destruction. Now, he argued, is not time to cling to the status quo for the sake of security, because that status quo no longer provides us with the security we need. Instead, he urged those listening to recognise the place that soil has at the heart of addressing so many of the urgent challenges we face today. And called for an open, science-based dialogue between stakeholders from all corners of the food system, to listen to one another and find ways to collectively shift our current model of production and consumption. He ended by expressing his optimism that just as the world has pulled together and collaborated to respond so rapidly to the current pandemic, so too can we join forces to find solutions to transition our food system before it's too late.

Opening the discussion on soil, Allan Buckwell

Allan started by explaining to the audience that this webinar was not going to catalogue the damage humankind has done to agricultural soils. There is a large literature on this. Suffice to say that soil management is at the interface of two of the crises of our time: climate change and biodiversity loss. Although soils are a massive carbon sink, our management of them over many decades now has caused rather too many to become significant sources of GHG emissions. Likewise, the intensification of farming operations has reduced soil organic matter, damaged soil structure, allowed erosion by water and wind and degraded ecosystem functioning in soils and above ground too.

It seems a paradox, he said, that despite this evidence of soil loss and degradation, whenever farmers speak of their soils, they invariably say that they aim to leave their soils in as good or better condition than they received them. Part of the answer to this puzzle may be that agricultural technology has enabled farmers to constantly improve agricultural productivity. The problem of course is that measured productivity does not include the pollution, GHG emissions or soil fertility loss. Society is now well aware that these are not occasional, side-effects of farming. They are incremental, widespread, and pervasive and their cumulative impact is what ultimately threatens the sustainability of our food system.

The focus of the webinar, he explained, is to identify positive actions for soil management we already know about and look at ways of rolling them out at scale.

The introduction of the four initiatives

Kerstin Rosenow, Head of Unit Research and Innovation, DG AGRI, European Commission started her introduction with the following video <https://www.youtube.com/watch?v=53bbzE2lpKc>. She went on to introduce the Commission's Soil Mission, stating that the focus on soil came from an immediate need to 'get soil out of the corner and into the light' and addressing one of the 'greatest challenges of our time'. With this in mind, the Soil Mission had set an ambitious target of doubling the rate of healthy soils by 2030, so that 75% of soils in Europe are in a 'healthy' condition in the next decade. They aim to do this by building collaborative alliances between researchers, land managers, businesses, policy makers and citizens to: identify quantified targets to tackle soil threats, enhance soil functions and improve "soil literacy" in society.

Mellany Klompe, Director of the [Soil Heroes Foundation](#), explained that Soil Heroes was providing a 'catalyst for the transition to regenerative agriculture'. They are working on enabling farmers both to see the benefits that improving soils can have on their business and supporting them to monitor and carry out research on their own soils. Expanding further on the Soil Heroes' definition of regenerative agriculture, Mellany said that it went beyond the principles of organic farming to provide a holistic approach to farm management that goes much further than regulating synthetic inputs and also includes new cultivation and planting practices which increase soil biology and structure.

Harry Smit, Snr Analyst, Farm Inputs and Farming at RaboResearch food and agribusiness, Rabobank, explained the [Soil Index](#) has been developed in collaboration between Rabobank (who finance 80% of farmers in the Netherlands NL), an Insurance company ASR (the largest in the Netherlands) and the drinkwaterbedrijf Vitens company, with the technical input of Wageningen University Research (WUR) and the Dutch Nutrient Management Institute (NMI). Together they have a collective interest in ensuring that agricultural land is sustainability managed, and with the Soil Index, they aim to contribute to this. The Soil Index, is a scoring system for soil. It is based on 20 + indicators (derived from soil testing and on farm practices) that determines the 'score' of the soil (adapted for soil type). The score provides an indication of how sustainably a farmer is managing their soil and is an indication of the distance to the target of sustainable soil management. It has four key aims: to create a common language to talk to farmers about soil, to link sustainable soil management to the bank's financial products, and impact investors, to potentially help farmers link to other sources of financing (carbon trading, environmental schemes etc.) and most importantly to show farmers how they can optimise their agronomic practices to increase their gross margins.

Finally, **Prof. Claire Chenu, Research Director - INRAE (French National Research Institute for Agriculture, Food and Environment) and consulting professor of soil science at AgroParisTech**,

introduced the [4 per 1000 initiative](#). The aim of the initiative is to preserve and enhance soil organic matter content, thus bringing benefits in terms of soil fertility, ecosystem services, food security *and* climate change adaptation and mitigation. 4 per 1000 refers to an aspirational target of an annual growth rate of 0.4% in the soil carbon stocks, or 4% per year, in the first 30-40 cm of soil, which would significantly reduce the CO₂ concentration in the atmosphere related to human activities. The initiative, introduced by French Agriculture Minister, Stephane Le Foll, during the COP21, shifted the view of agriculture as not only the problem, but also part of the solution. The initiative has four main pillars: to promote awareness raising amongst a wide group of stakeholders, to promote the development and implementation of sustainable management practices that enhance and preserve soil organic content, to develop networks between stakeholders (no one stakeholder has the solution and therefore we need to work collectively to create the required impact), and to promote research.

Exploring the concepts further through discussion and Q&A

Below is a much reduced and summarised version of the responses of the invited experts in both the discussion and the Q&A session, grouped under 8 key themes which arose during the webinar. The views recorded here are not attributed to the specific speakers. If you wish to listen in more detail, go to the online recording: <https://risefoundation.eu/a-conversation-on-eu-soils-ffa-2021/>

1. A farm practice versus a results driven approach

There is no one solution to soil and no one action which will have an impact by itself, therefore a range of actions – both practice and results driven – need to be applied. What is important is that farmers need to be given the freedom to choose which actions should be best applied to their individual circumstances.

A results-based approach can help the farmer to see the impact that his or her actions are having. It is important that farmers can see the difference improving soil will have on their financial bottom line to motivate them to continue.

At Soil Heroes they work to show farmers how changing farming practices can have an impact on their production. This has become particularly apparent during the recent summer droughts. As climate change results in long dry summers and wet winters farmers need soils with effective water cycling properties more than ever, both for drainage and retention. In these past summers, farmers have been able observe the difference that soil organic matter and compaction has to these properties.

2. The crop will remain by far the largest source of income and therefore any change to the income from the main crop will have the greatest impact on how farmers farm.

We have to consider that for many farmers, the crop production revenues will remain their principal income and any payments for ecosystem services are likely to be only a fraction of the gross margin generated by a sale of the crop. Therefore, to convince farmers, they have to see that improving soil can directly impact the gross margin of the sale of their crops and secondary to this, they can also benefit from additional payments (ecosystem payments, carbon payments) for taking this route.

The polluter pays principle i.e., applying a pollution tax to plant protection products, or carbon emissions or nutrients was not seen as an effective step in turning around soil management in Europe. Rather the application of knowledge and research and making farmers aware of the difference changes in soil management could make to both their own bottom line and the value of their land *and* the health of the land they are to pass to the next generation, was seen as a greater incentive.

Farmers often lack both the knowledge for how to change, and the right incentives to take the risk to change. We should increase incentives to support the transition in farming practices. There are many new and interesting incentives coming through – such as carbon payments, or labelling premiums, but further work is needed to see what is possible in this area. A number of suppliers, such as the potato processing industry, are paying a premium for potatoes grown in longer rotations, but despite a lot of talk of the growth of the ‘sustainable buyer’, the food industry remains sceptical about the scale of such premiums they can realise in the market. Experience to date shows that on the whole consumers have a limited willingness to pay such premiums.

This brings the question of food pricing and the internalisation of the external environmental costs of food production – a larger societal question of consumers having to pay the true price of food. They are learning to pay this for energy and transportation, but there is some way to go to resolve the social and political barriers to taking this approach for food.

Farmers benefit from diversified income streams. The low margins and fluctuating price of main-stay crops is volatile and provides such slim margins that it remains difficult for the farmer to shift production practices. If a value was placed on the ecosystem services they provide, in addition to carbon sequestration *and* the price of the crop, this could support a shift.

Farmers could work with water companies who could pay farmers to manage soil for water management and thereby reduce the water company risks. But the crop will remain by far the largest source of income and therefore the biggest difference will be made through the price farmers receive for their crops.

3. Carbon farming has the potential to be a useful additional income stream for farmers but has to be considered within a holistic view of soil health.

Payment for carbon sequestration could be an important *additional* income stream for farmers, on top of their main crop.

One problem with carbon farming is that carbon stock in soil changes very slowly and can show large variations between one sample and the next in the same field. This combined with the costs of measurement has meant that the easiest way to measure carbon stocks for payment is through farm practice models (i.e., by adding the farming practices used into a model to predict the changes in carbon).

Carbon is a good indicator of soil health, but it has to be seen in the holistic view. Carbon farming is *not* acceptable if it is at the expense of an increase in other GHG emissions (methane and nitrous oxide), in soil erosion or at the detriment of biodiversity and thus ecosystem services.

4. Soil sealing maybe one of Western Europe’s greatest soil challenges.

Soil sealing could be one of the greatest challenges for soil in Western Europe today. We will continue to lose some of our best soils to building development unless farmers can see a future in farming that will provide them with an adequate income to dissuade them from selling and leaving the farming sector.

There is also a real lack of knowledge in planning administration regarding soils. They need to be educated that not all soils are the same and soil has to be taken into consideration when developing urban planning.

5. It may not be appropriate to have an agreed pan-European index for soil. Rather, it maybe more important to agree on the range of soil indicators and how they are measured.

The European Joint Programme SOIL is currently surveying all indicators used in Europe to measure soil properties in order to create a common understanding of the indicators used and how they are measured.

However, it may not be appropriate to create a common set of European soil indicators or a soil index to determine the situation of all soils in Europe. Not all soils are equal, or able to form the same functions and indicators need to be context specific. For example, water retention capacity is not the same in all soils, or all production systems. We should aim instead for an agreement on how we should measure indicators, to ensure traceability and then leave it to member states and companies to assemble their own index, as the Rabobank Soil Index has done.

Soil is very complex, and as asked by one participant, how can you simplify such a complex issue with a single index. Harry responded that the number of the soil index is generated from over 20 indicators. He also pointed out that the current index is only the first version. They expect the index to develop overtime, especially as research on the measurement of the biological components of soils increases. However, the soil index was set up to ask a binary question. Is a farmer sustainably managing his or her soils, or not? And as a result, there will always need to be a level of simplification. The most important aspect of the index is that the indicators are there to help the farmer to make better decisions. In the end, as commented by Allan, don't let perfection be the enemy of improvement.

6. Using the Common Agricultural Policy (CAP) to stimulate sustainable farm management at the farm level.

Ecochemes are taking a step in the right direction by giving Member States greater leeway to choose how to react to the situation on the ground, but there is some way to go before they are finalised in the new CAP.

The Commission has recommended to MSs *before* they draft their strategic plans to consider how they will link strategically to the Soil Health and Food Mission.

Farm Advisory Services (FAS) are key here. We need to broaden our thinking around FAS and ensure that that we are targeting the farmers' most trusted advisor to be up to date with actionable knowledge.

Progress has been made in that 2 new results-based indicators have been proposed for the CAP, on soil erosion and soil carbon.

7. Linking in the wide range of soil initiatives with the Soil Health and Food Mission

The aim of the Soil Mission Implementation Plan (currently in the drafting stage) is to bring resources and ideas together to try and pool information and avoid overlap and fragmentation. Part of the roll out of the plan will be the 'light houses', demonstration projects/ farms/ initiatives that will experiment with measures on the ground and provide examples and peer to peer learning with other practitioners.

8. And a final word from the panellists....

- Kerstin Rosenow – the key is connecting stakeholders, bundling knowledge and resources for soil management as well as creating awareness amongst citizens to profit from the sustainable food movement and create a pull effect for soils.

- Mellany Klompe – teaming up to work together to create change and making sure that we apply a holistic approach to whole farm management.
- Harry Smit – aside from the above, to tap into the impact soil can have to the value of land for inheritance.
- Claire Chenu – all actors working together; bring the immense amount of knowledge we have together in a clear and actionable way and ensuring that soil is multifunctional in all contexts.

Closing remarks – Janez Potocnik

In his closing statement Janez underlined the importance of a natural resource management approach to the biodiversity COP and underlined four factors that had been jointly drafted by himself and this International Resource Panel Co Chair Izabella Teixeira. Namely, 1. to know your true impact, 2 to plan together 3. to grow with nature and 4. to value nature.

He went onto recognise that the difficulty that policy makers responsible for protecting the environment have is that the tools needed to solve the problems they face are often in the hands of other colleagues, and thus the success of environmental policy is dependent on the understanding and willingness of those colleagues to listen and act. Therefore, he called for joint pathways and joint targets to tackle climate, biodiversity, healthy and pollution issues and a need for a coordinated approach to soil/land/food chain issues.

He closed by urging the audience to visit the [Foundation's previous work](#) which remains very relevant to the challenges we face today, and to thanking Koppert for their ongoing support.

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